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I sent a specimen of these polypodies to Mr. Jay G. Underwood of Hartland, Vt., and this is what he says about them:

"With regard to the Polypody would say this fern does vary very much according to its habitat. I have found forms in cold ravines, that are similar to the one you sent. Botanists do not, in this country, recognize these as of any definite difference requiring names. I think that in England a good many of these forms have been given names, but nothing of the sort has been attempted here, probably because the forms intergrade and do not seem to breed true."

So, now, I meditate upon the misfortune of the little Polypody's fate of being reared and thriving in our uncrowned Republic, when if living under the skies of the crowned Kingdom they might be given a name of their own. The brook still gurgles beneath their feet, and the rustling leaves over their canopy of green still whisper the name, "*Polypodium vulgare*."

UNION, ME.

Notes and News

An old letter, written in 1836 by Dr. Joseph Barratt of Middletown, Conn., to Dr. Torrey and now preserved at the New York Botanical Garden, contains an apparently unpublished detail in regard to the discovery of the hart's-tongue fern in central New York by Pursh. Dr. Barratt writes:

"I was glad to hear you had discovered *Scolopendrium vulgare* in N. Y. Some years since I conversed with Mr. J. Geddes about this fern. He told me he was with Pursh at the time he found it, and he exclaimed: 'I am better pleased at finding this plant than a five dollar bill.'—Mr. G. said it was near but not upon his premises."

In another letter Dr. Barratt records with enthusiasm his first sight of "that rare and beautiful fern, *Hydroglossum* [now *Lygodium*] *palmatum*." He makes the interesting observation that the stems appear to twine both ways. Has anyone noticed this since?

By the will of the late John T. Morris, of Philadelphia, his beautiful estate at Chestnut Hill will become, in due time, the site of a botanic garden, a museum of natural science "with special emphasis upon botany," and a school of practical horticulture. The garden is to be not merely a show place, but is to provide training for the students of the school, and the museum is also to contribute to that end. Students are to receive tuition, clothing and living expenses during a course of at least three years. The residue of Mr. Morris's estate, after other bequests are paid, is left as an endowment fund for the institution; and the provisions of the will become effective at the death of his surviving sister.

The special interest of all this for the fern-lover lies in the fact that Mr. Morris had a fine collection of ferns, both hardy and hot-house species, and that the permanence and development of this collection are now assured.

CAN FERNS BE IDENTIFIED BY TASTE?—At the Columbus meeting of the American Association for the Advancement of Science, Prof. E. T. Reichert discussed before a botanical meeting "The specificity of proteins and carbohydrates in relation to genera, species, and varieties,"* or in other words, the chemical differences between different kinds of plants. He reported the existence of recognizable differences, even in the case

* For a printed account of the subject, see *Am. Jour. Bot.* 3: 91-98. March 1916; also *Carnegie Bulletin*, No.

of closely related forms, but the differences in such cases were not as great as when the forms were less closely related. On the other hand, the chemical compounds of the species and varieties of a given genus were found to resemble each other markedly when compared with the compounds of a distinct genus. That is, genera, species, and varieties differ from each other chemically as well as in external and internal structure.

This discovery has practical possibilities. I do not refer to the possibility that in the future, the floral manuals will be likely to key out the plants described by chemical means, although that is already done in the case of "flowers" like *Bacillus Coli-communis*, *B. dysentericus*, and *B. typhosus*, et al., which can not be otherwise distinguished, except as to their effects. It is conceivable, however, that in cases of adulteration, a knowledge of the chemical character of possible adulterants might be of assistance.

Prof. Reichert had nothing to say about chemical differences among ferns. To supply that deficiency I would like to suggest a means by which readers may investigate for themselves. The simplest means of testing chemically is by the taste. It has long been an observation of mine that ferns are all alike, as far as I have investigated, in taste, and that they have a distinctive taste. This general fact, if established, might be of value to the fern tyro, and help him to separate ferns and carrots. It would have helped me about twenty years ago when I spent an hour or more trying to find among a patch of young Herb-Robert some leaves which I could call sterile leaves of slender cliff-brake.

As far as ferns are concerned, I am sure the investigation would be perfectly safe. The most interesting point that I would record is that already stated, that ferns in general possess some chemical compound in

common which can be distinguished by the taste. It is a fact that different kinds vary in flavor, bitterness, astringency, etc.—but they also agree. Ferns differ, however, from lycopods, and equisetes, which do not have this taste. The *Ophioglossaceae* have it to a slighter extent, I believe, as do the water fern-worts. I wish some one would verify or disprove that statement about the *Ophioglossaceae*. Those who wish to learn more about the ferns they already know may be interested to determine whether they can discover specific differences, or generic. Some may come to have the expertness of the tea tasters who can tell whether a given sample of tea was picked on the morning of June third, 1893, or on Sept. 6, in the evening, 1888, or something almost as difficult.

R. C. B.

NOTES ON TWO CRESTED FERNS.—The list of the wild New England ferns seems to be complete, except for new localities to be found. The fern collector has to look for something else, and the hybrids and abnormal forms of ferns open a good field for hunting.

In the British Islands many abnormal forms have been found and with these and plants raised from their spores, a quantity of beautiful abnormal forms have enriched the collections of the enthusiastic fern grower.

In the United States very few abnormal forms have been found so far, but among them and some hybrids found wild, there are some plants of value, apt to produce new forms. The taste for abnormal form growing is not much developed as yet but it is hoped that, when better known, these beautiful ferns will find more admirers.

It was my good luck to find two crested ferns, one *Polystichum acrostichoides* with crested fronds. That plant was described in the *Fern Bulletin*, vol. xx, page

80, as *Polystichum acrostichoides*, f. *cristatum* Clute. The plant was found in the woods among others; since it is in cultivation, only the fertile fronds are crested. From these I raised some sporelings which are now in their third year and I hope will show some crests this next season. Mr. Huss, of Hartford, has taken charge of these young plants.

The other is a crested, or more correctly, furcated form of *Asplenium platyneuron*. I found it growing on a bank near an old cemetery. There was a little colony among the ordinary ones which covered the whole bank. Like *Polystichum acrostichoides*, only the fertile fronds are furcated. I removed a few plants to the fernery, and from them I had good spores, which are now in the prothallium stage and will show better what they will do. They are also in Mr. Huss's care.

AMADÉE HANS.

MORE ABOUT OPHIOGLOSSUM VULGATUM.—Another incidental answer to the question "What is the habitat of *Ophioglossum vulgatum*?" has just been published by Miss Norma Pfeiffer* in connection with an account of some prothallia of this species found near Chicago. The species was found in two localities, one moist, and subject to flooding, the other drier. The prothallia were found only in the moist situation, and the suggestion was made that probably only in moist places are the spores able to develop into prothallia. A correlated suggestion was made that in dry places reproduction must be by means of buds from the roots. Another observation recorded was to the effect that in the moister locality, the spores were discharged practically two weeks earlier than in the other. The prothallia were

* Bot. Gaz. 61: 518-522. 15 June 1916.

found to be as before described by Bruchmann; viz., erect, blunt, knobby, rootlike structures. It was noted that the roots were usually horizontal in position, pointed, and smooth, as well as longer. Very few were found and it was necessary to sort these very laboriously from the soil. It was noted that Bruchmann to obtain the seventy prothallia upon which he worked, had to spend thirty-five days digging and sorting.

Has any reader ever made observation on variations in fruiting time as related to moistness of the situation? Has anyone ever seen young plants developing from the roots?

R. C. B.

FERN LEAVES AT FIFTY CENTS APIECE.—These are not leaves of the rarest fern in the world about which Mr. Bates has asked but fresh greenhouse-grown leaves which are sold for decorative purposes. The particular ones in mind are from *Polypodium Maudslayi*, a form of the common tropical *P. aureum* (*Phlebodium*), produced by W. A. Manda, S. Orange, N. J. A single plant stem produces only a few leaves a year, but as these will remain fresh for a long time, they are valuable in decorating. The variety differs from the species in having beautifully frilled or ruffled pinnae. Leaves of *Nephrolepis* varieties are similarly used but do not bring as high prices, as they are produced more freely. So also are certain tropical adiantums, the cut leaves of which are used in bridal bouquets, for example. J. J. M. Farrell has an article in a recent number of the florists' weekly, *Horticulture*,* telling how to grow maidenhair for this purpose.

* Vol. 23: 851. 24 June 1916.